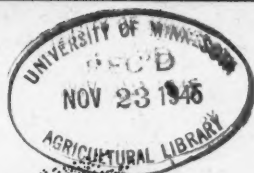


# The American FERTILIZER

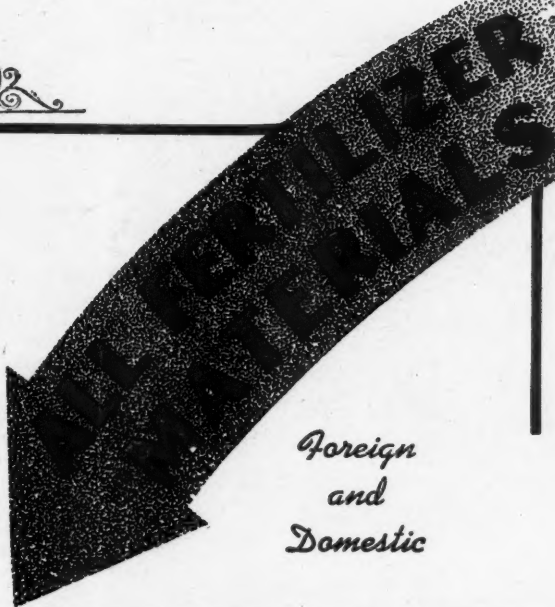


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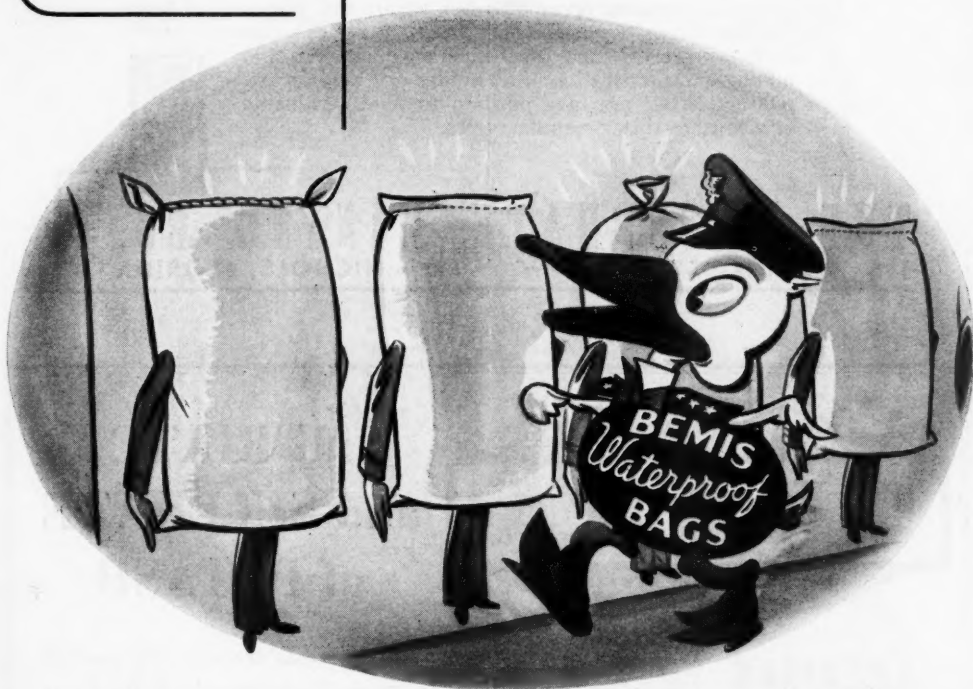
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See page 29





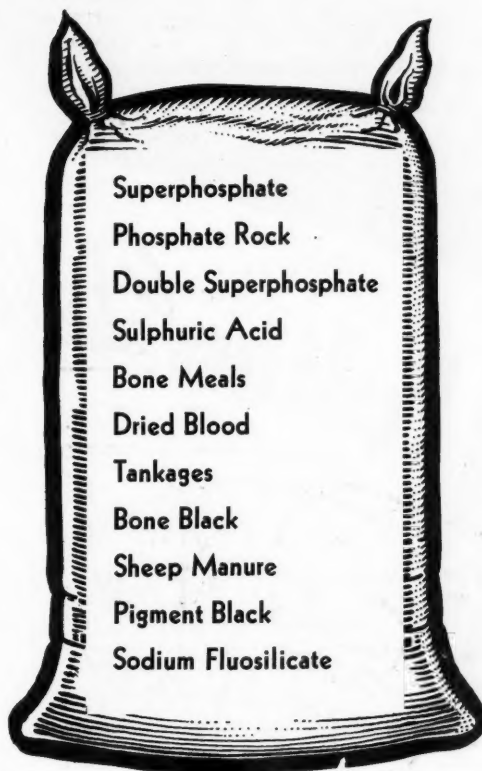


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# AMERICAN FERTILIZER

"That man is a benefactor to his race who makes two blades of grass to grow where but one grew before"

Vol. 103

NOVEMBER 3, 1945

No. 9

## Interrelationships of Soils and Plants, Animal and Human Nutrition\*

By J. M. NAPIER

*Extension-AAA Agent*

**R**ECENT scientific developments in soil fertility and the nutrition of plants, animals, and human beings are opening up new avenues in farming efficiency. This is shown by increased yields of more nutritious crops and by better quality in animals and improved health among farm people.

Scientists tell us that the nutrients of the soil, such as phosphorus, calcium (lime), potash, magnesium, and a few others constitute only about 5 per cent (ash) of plant, livestock, or human bodies,—but this is a vital part of their make-up. Of these essential nutrients phosphorus and calcium are found in larger amounts than the others. The remaining 95 per cent consisting of carbon, hydrogen, oxygen, and nitrogen comes from air, water, and sunshine. At the same time some of the scientists tell us that the 5 per cent coming largely from the soil controls to a large degree the utilization and the efficiency of the 95 per cent derived largely from the water and the air. The 5 per cent of minerals is the motor or nerve center, so to speak, that powers and runs the plant or animal machine and largely determines its efficiency.

### Relation of So-Called "Go" Crops and "Grow" Crops to Soil Fertility and Nutrition and Adopted Systems of Agriculture

Grass, hay, grain, and other feeds for livestock and food for humans serve two body functions. One of these functions consists in supplying the materials by means

of which the body is constructed. The other is that of providing energy to run the body machinery and to move the animal and its load about. Growth demands protein materials to build muscle. It also demands lime and phosphate in relatively large quantities to build bones. Only a proteinaceous substance already fabricated or manufactured by the plant can meet the full protein requirements for livestock or human beings. Animals cannot use the simpler elements for making their protein and other organic compounds as in the case of plants. Both the lime and the phosphate utilized by animals also mostly come by way of the plants from the soil. The minerals and the proteins are required in larger amounts by females during gestation, by young animals, and by children. These are the "grow" crop constituents and they come from the soil.

Foods from starchy grains, saccharine plant compounds, and much of the plant's fibrous structure are the energy or power sources for livestock and humans, and these foods do not come directly from the soil elements. They are sometimes designated the "go" food constituents that plants seemingly make from those materials present in ample quantity in air, water, and sunshine. But we should remember that plants cannot supply this energy, except through the help of their 5 per cent of their own "grow" foods or minerals which are taken by their roots from the soil and which represent the plant's mineral content or ash.

It has been pointed out by Dr. William Albrecht, University of Missouri, that these

\*Reprinted from Circular 273, Clemson Agricultural College, Clemson, S. C.

plentiful nutrients coming from the air, water, and sunshine (the 95 per cent) will not be made into the highest quality feed for livestock, neither will the livestock nor crops manufacture the highest quality human food for us, unless we provide an ample supply of mineral nutrients in the soil on which the big burden of out-door chemical *synthesis* or manufacturing known as agriculture depends.

The relationship between the distribution of livestock and the fertility of soils is clearly defined. Throughout the United States the numbers of livestock are largest in sections of high soil fertility. In the Western States of relatively small rainfall, the lime-laden prairie soils naturally produce highly proteinaceous and mineral-rich crops of grass, legumes, and cereals. Whereas on Eastern and Southern soils of relatively high rainfall, the larger proportion of the soils has been leached of lime and oftentimes eroded away, and hence they produce feed crops of lower nutritive value. The West is the section of our largest number of livestock and "grow" crops, and the East and the South are primarily the home of our "go" crops.

#### **Relation of Soil Fertility Level to Sequence of Major Crops and Their Relative Nutritional Value**

In connection with the subject of animal nutrition it has been pointed out that the mere delivery of calcium and phosphorus to the digestive tract and a high degree of digestibility of them are apparently not enough. These essential minerals, say some of the scientists, must enter into nutritional service for the plants first if they are to be of greatest nutritional value to the animals. If these are the facts, then feedstore minerals shoveled into the feedbox are not usually the equal in value to those obtained from the soil by the plant.

As the fertility of the soil is depleted, the conditions become unfavorable for the production of high quality food and feed crops and it is necessary to substitute crops of lower fertility requirements and lower food and feed value. As illustration of this fact, some farmers have been forced to discontinue the growing of alfalfa and have replaced this crop with soybeans or cowpeas. Alfalfa is highly exacting in its soil requirements; it is equally as high in its rank as a desirable hay crop. Soybeans and cowpeas are less exacting in their soil requirements; likewise, as hay crops, they are not generally accepted as being as desirable as alfalfa. For similar reasons some farmers find it necessary to

plant small grain for a winter cover crop rather than winter legumes.

It has been noted by Dr. H. P. Cooper of Clemson College that there is a more or less definite succession of pasture plants associated with the depletion of soil fertility in pastures. Virgin soil with an accumulation of plant nutrients supports pasture plants of high food value such as white Dutch clover, hop clover, Bermuda grass, and dallis grass. As the soil fertility is depleted, these plants are replaced by plants with lower fertility requirements such as lespedezas, carpet grass, poverty grass, and broomsedge.

Unfortunately, the minerals available in some substitute crops consist more of materials such as silicon with little or no food value, rather than the more highly desirable calcium, phosphorus, and all other necessary nutritional materials that come with them. An unbalanced plant diet offered by the soil cannot be offset by minerals added to the vegetative bulk as feed, any more than wheat straw would be good food for livestock when supplemented by saltpeter, limestone, and bonemeal. Synthetic diets at best leave much to be desired before they will be equal to the spring growth of forage in Bermuda, dallis grass, white Dutch clover, or lespedeza pastures on fertile soils.

#### **Economic Necessity of Good Yields and High Food and Feed Value**

It has been known for many years that the chemical composition of hay or pasture crops may be influenced by the degree of maturity or time of cutting or grazing, and by the kind of soils on which the crops are grown. The first spring grass or early-cut hay is more palatable, digestible, and nutritious. The protein content decreases and the crude fibre increases with the maturity of grasses and hay. It is only recently that experimental results have shown that the concentration of protein, minerals, and carbohydrates in plants is changed by the application of different minerals.

Southern farmers generally think of the application of fertilizing materials in terms of increased yields in pounds or bushels per acre. They give little or no thought to chemical or nutritive difference in the foods or feeds resulting from difference in soil treatment.

Experiments have been reported by Dr. Albrecht showing that applications of superphosphate and lime increased the acre yield of lespedeza hay by 27 per cent, and the hay from the treated area gave an increase in

(Continued on page 26)



## N. F. A. Fall Convention

An interesting program has been prepared for the Fall Convention of the National Fertilizer Association, which will meet at the Atlanta Biltmore Hotel, Atlanta, Ga., on Tuesday and Wednesday, November 13th and 14th. From the reservations already received by the hotel, there should be a very representative attendance of the industry. All fertilizer manufacturers are invited to attend.

The Board of Directors and the Executive Committee will hold meetings on Monday, November 12th. The two general meetings will be held on Tuesday and Wednesday, beginning at 10 A. M. Among the speakers are:

Dr. C. E. Brehm, Dean of the Tennessee College of Agriculture and Director of Extension, Knoxville, Tenn., who will discuss post-war agriculture.

Dr. Ralph W. Cummings, Head of Department of Agronomy and Assistant Director of North Carolina Agricultural Experiment Station, Raleigh, N. C., who will discuss production of corn in the South.

J. P. Wizeman, Chief, Inorganics Branch, Chemicals Bureau, War Production Board, Washington, D. C., who will discuss the fertilizer materials situation.

Hugh Comer, Avondale Mills, Sylacauga, Ala.

M. H. Lockwood, Chairman of the Board of Directors.

C. T. Prindeville, Chairman of the Association's Public Relations Committee.

Bert C. Goss, of Hill & Knowlton, public relations counsel.

R. H. Lush, of the Association staff, who will discuss pasture problems.

There will be a Convention Dinner at the hotel on the evening of November 13th.

The local committee on arrangements consists of: J. Walter Cooper, Chairman; D. W. Brooks; George W. McCarty; J. Rucker McCarty; A. H. Sterne.

## Nitrate Brings More Orchard Grass Seed

Top-dressing orchard grass with ammonium nitrate increased yields of seed and hay in tests made by the Kentucky Agricultural Experiment Station in Hardin, Henry, Oldham and Warren counties.

Where nitrate was used at rates equivalent

to 60 pounds of nitrogen to the acre, seed yielded 11 bushels to the acre more than where no nitrate was applied, and hay production was a ton and a quarter more to the acre.

The tests included applications of ammonium nitrate equivalent to 20, 40 and 60 pounds of nitrogen to the acre. Yields of both seed and hay increased with increases in the rates. Applications were made in February and April. February applications produced slightly more seed and April applications slightly more hay. Differences between dates of application, however, were not considered significant.—*Kentucky Extension Service.*

## "Green Acres," N. F. A. Publication, Stresses Pasture Fertilization

In two editions, one for the south and one for the north, *Green Acres*, a publication of The National Fertilizer Association, has been issued to promote intelligent fertilization of pasture and hay lands.

Written by R. H. Lush, livestock and pasture specialist, the publication carries the latest authentic information relating to the use of fertilizer for increasing yields and for improving the nutritive value of pasture and hay grasses based on tests conducted by the State Agricultural Experiment Stations.

Pastures and hay producing plants differ in the south and north and, of course, the two editions of the publication deal with conditions existing in the two regions.

Interest in fertilizing pastures and forage crops is growing throughout the country as a result of recommendations of agricultural agencies, both state and national. The publication is, therefore, timely and in line with the growing interest in this field of expansion of fertilizer uses.

## August Sulphur Production Increases

In August, 1945, the month in which the war ended, more native sulphur was produced in the United States than in any previous month, according to the Bureau of Mines, United States Department of the Interior.

PERIOD	PRODUCTION	MINE SHIPMENTS	PRODUCERS' STOCKS
August, 1945 .....	346,349	350,961	3,711,311
July, 1945 .....	313,391	457,970	3,698,357
August, 1944 .....	306,146	297,168	4,161,012
Monthly Ave., 1944 ..	268,180	293,249	

### August Superphosphate Shows Increase

The Bureau of Census figures for the superphosphate industry during August show total production, figured on the basis of 18% superphosphate, of 695,390 tons. Shipments and amounts used in mixtures made in the producing plants totaled 664,747 tons, leaving stocks on hand at the end of the month 885,172 tons. This is an increase of about 5 per cent in production over the July figures. The increase was largely in the 18% grade, as the 45% concentrated and the wet-base goods showed only small increases.

### Texas Fertilizer Sales Increase

Fertilizer sales in Texas for the 1944-45 fertilizer year totaled 214,109 tons, an increase of 23 per cent over the previous year's figures of 173,188 tons, according to a statement by A. D. Jackson, Editor of the Texas Agricultural Experiment Station. Sales during the last six months of 1944 amounted to 50,011 tons, while those for Jan.-June, 1945, were 164,098 tons. The three leading counties in fertilizer purchases were Hidalgo with 36,393 tons, Cameron with 11,074 tons, and Cherokee with 6,061. No other county used over 5,000 tons.

#### SUPERPHOSPHATE: PRODUCTION, RECEIPTS, DISPOSITION AND STOCKS, BY TYPE, AUGUST, 1945 IN SHORT TONS (2000 POUNDS)

	NORMAL 18% APA	CONCENTRATED 45% APA	WET-BASE GOODS 18% APA
<b>AUGUST, 1945</b>			
Stocks on hand, beginning of month	761,938	28,563	3,234
Production	638,528	21,617	2,819
Received from other acidulators (inc. exchange transfers)	15,219	-	-
Book adjustments (account of inventory)	+2,854	+30	-192
Total supply	1,418,539	50,210	5,861
Disposition, total	603,734	24,006	1,004
Shipments, total	352,739	23,938	742
Used in reporting plants	250,995	68	262
Stocks on hand, end of month	814,805	26,204	4,857
<b>JULY, 1945</b>			
Stocks on hand, beginning of month	730,062	28,602	2,372
Production	611,388	21,251	2,332
Received from other acidulators (inc. exchange transfers)	3,928	-	-
Book adjustments (account of inventory)	-15,005	-154	-46
Total supply	1,330,373	49,699	4,658
Disposition, total	568,435	21,136	1,424
Shipments, total	319,662	20,977	1,285
Used in reporting plants	248,773	159	139
Stocks on hand, end of month	761,938	28,563	3,234
<b>AUGUST, 1944</b>			
Stocks on hand, beginning of month	751,485	47,706	4,047
Production	552,295	18,644	2,582
Received from other acidulators (inc. exchange transfers)	4,520	-	-
Book adjustments (account of inventory)	+4,543	-	+5
Total supply	1,312,843	66,350	6,634
Disposition, total	548,663	29,775	918
Shipments, total	294,351	29,611	585
Used in reporting plants	254,312	164	333
Stocks on hand, end of month	764,180	36,575	5,716

<sup>1</sup>Revised.

## Plant Food Council Arranges Southern Fertilizer Conferences

The American Plant Food Council has made arrangements for three fertilizer conferences to be held at Raleigh, N. C., Columbia, S. C., and Atlanta, Ga., on November 7th, 8th and 9th respectively. At these conferences, farmers, leaders in agronomy, research and fertilizer control will meet for their first post-war discussion of fertilizer problems in peace-time agriculture. At each conference, Clifton A. Woodrum, President of the American Plant Food Council, will assist a local executive in presiding over the sessions.

### North Carolina Meeting

Edwin Pate of Laurinburg, N. C., a well-known farmer and businessman, and President Clifton A. Woodrum will preside at the sessions to be held in the State College Y. M. C. A., Raleigh, N. C., on Wednesday, November 7th, beginning at 10 a. m.

Fertilizer needs, economical usage and the need for uniformity in fertilizer recommendations and control laws will be discussed. Farmers and their leaders are vitally concerned with these problems, solutions of which are paramount in our post-war agriculture.

Speakers will include Col. J. W. Harrelson, Chancellor of N. C. State College; Ralph B. Douglass of Norfolk, Va., Chairman of the Council's Executive Committee; Dr. T. B. Hutcheson, Professor of Agronomy, Virginia Polytechnic Institute, on "Fertilizer Needs"; Dr. Ralph W. Cummings, head of the agronomy department at N. C. State College and Assistant Director of the N. C. Experiment Station, on "Fertilizer Trends."

Dr. L. D. Bayer, Director of the N. C. Agricultural Experiment Station and Dean of the State College School of Agriculture, will discuss "The Economics of Fertilizer Use"; D. S. Coltrane, Assistant N. C. Commissioner of Agriculture, will discuss "The Need for Uniformity in Fertilizer Recommendations and Control Laws," and Mr. Woodrum will speak on "Legislative Trends" at the afternoon sessions.

### South Carolina Meeting

George Gage, of Anderson, S. C., fertilizer manufacturer, and President Clifton A. Woodrum will preside at the sessions to be held at the Wade Hampton Hotel, Columbia, S.

C., on Thursday, November 8th, beginning at 10 a. m.

Speakers will be: Dr. R. Frank Poole, President of Clemson College, Clemson College, S. C.; Dr. C. G. Peebles, Assistant Agronomist at Clemson College, on "Fertilizer Needs"; Dr. G. H. Collings, Professor of Agronomy, Clemson College, on "Fertilizer Trends."

Dr. D. W. Watkins, Director of the South Carolina Agricultural Extension Service, Clemson College, on "The Economics of Fertilizer Use"; Dr. H. P. Cooper, Director of the South Carolina Agricultural Experiment Station, on "Need for Uniformity in Fertilizer Recommendations and Control Laws," and President Woodrum on "Legislative Trends."

Rep. John L. McMillan of South Carolina, member of the U. S. House of Representatives' Agricultural Committee, will be present.

### Georgia Meeting

John E. Sanford of Atlanta, fertilizer manufacturer, and President Clifton A. Woodrum will preside at the sessions at the Atlanta Biltmore Hotel, Atlanta, Ga., on Friday, November 9th, beginning at 10 a. m.

Speakers will include: Dr. H. P. Stuckey, Director of the Georgia Agricultural Experiment Station, on "Fertilizer Needs"; Dr. W. S. Brown, Director of the Georgia Agricultural Extension Service, on "Fertilizer Trends."

Dr. Paul W. Chapman, Dean of Agriculture at the University of Georgia, on "The Economics of Fertilizer Use"; Tom Linder, Georgia Commissioner of Agriculture, on "Need for Uniformity in Fertilizer Recommendations and Control Laws," and President Woodrum on "Legislative Trends."

## German Potash Production

According to figures published by the U. S. Bureau of Mines the output of potash-producing salts in Germany during the years of 1938 to 1942 was maintained at about 14 million metric tons. These averaged 10 to 15 per cent  $K_2O$  and the bulk of the production was refined into potash salts of 49 to 50 per cent  $K_2O$ . About 70 per cent of this was used in Germany, the balance being exported. The mines and plants experienced virtually no war damage, and as soon as transportation and mine supplies are available, mining can be resumed.

## THE AMERICAN FERTILIZER

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Vol. 103	NOVEMBER 3, 1945	No. 9
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## Principal Articles in This Issue

SOME OF THE INTERRELATIONSHIPS OF SOILS AND PLANTS, ANIMAL AND HUMAN NUTRITION.....	7
N. F. A. Fall Convention.....	9
August Superphosphate Shows Increase..	10
Plant Food Council Arranges Southern Fertilizer Conferences.....	11
Urge Early Fertilizer Deliveries.....	12
Surplus War Plants.....	12
N. F. A. Gives Luncheon for Members of the Press.....	14
Soil Program Control for 1946 to Be Decentralized.....	16
FERTILIZER MATERIALS MARKET:	
New York.....	17
CHARLESTON.....	17
CHICAGO.....	17
Contribution of Sulphate of Ammonia to Food Production.....	22
Commercial Fertilizers Increase Idaho Potato Yield.....	24

## Urge Early Fertilizer Deliveries

Even though the war is over, the problem of meeting the demand for fertilizer remains practically unchanged.

Overtaxed transportation facilities and a continuing shortage of labor and materials—three war-born complications—have not been relieved, and there is little prospect of any let-up during 1946.

As a result, in spite of all that the fertilizer industry can do, the only way that farmers can be sure of getting what they want when they want it is to place orders early and to accept deliveries early.

Farmers who place their orders this winter will have the definite advantage of receiving the types of fertilizers they require, and will not take the chance of having an order turned down or decreased on account of circumstances over which the fertilizer manufacturers have no control.

In certain areas last spring, orders totaling thousands of tons had to be turned down because the companies were unable to make shipments at the height of the demand. Realizing this situation might have been avoided if the orders had been received and shipped earlier when the demand was not so great, the manufacturers are making every effort to eliminate a similar development this season.

However, there is nothing more that they can do under the circumstances except to urge farmers, for their own good, to order now and accept delivery as early as possible.

## Surplus War Plants

The Secretary of Agriculture has been asked to investigate and make recommendations to Congress concerning the disposition of war plants capable of producing fertilizer materials. Several of these plants, designed to produce munitions, have been used to some extent during the war to produce nitrogenous plant food at a time when farmers were facing a critical shortage of nitrogen in their fertilizers, and at a time when it seemed beyond the ability of private enterprises to meet war demands and agricultural needs at the same time. The relief thus provided by Government munition plants helped materially in food production, and as a war measure was considered entirely justified.

But now that the war is over and these munition plants are idle, the picture has



changed. Private industry is again geared to produce against all peacetime demands. If the demand increases, private industries are in position to expand production proportionally.

Fertilizer manufacturers, as a whole, are buyers of nitrogen materials and not producers. They are anxious to get nitrogen cheaply. They hold no brief for the producers. But they do not want the Government to enter directly or indirectly into the manufacture of nitrogen or any other fertilizer material, except during war emergencies.

In the first place, the Government has never been noted for efficient production, and it offers no assurance of cheaper goods, even though the plants are operated tax-free. Nor would it be fair to private industry for the Government to ignore costs and distribute products at an actual loss. The fertilizer industry cannot easily forget how TVA entered into competition with private industry and actually gave away its products for "demonstration" purposes.

Nor will the fertilizer industry fail to forget that a bill is pending in Congress that would place the Government into the manufacture of fertilizers, and inject the virus of socialism into the body politic of this nation. The fertilizer industry is, of course, averse to being the guinea pig of this experiment.

The munition plants should be sold to private industry, maintained as stand-by plants for future wars, or scrapped. Like the munitions they made, they have served their purposes. If there is an actual need for them in the manufacture of fertilizers, none will realize that quicker than private industry, and none will use it better for meeting the public demand.

### **Camp to Succeed Myers as Chilean Nitrate Vice-President**

Chilean Nitrate Sales Corporation has announced the resignation of A. Nelson Myers as Vice-President and General Sales Manager, effective December 31, 1945. Mr. Myers had served in that capacity since August, 1940.

To succeed Mr. Myers, the Company has promoted Roy F. Camp who has been a member of the staff for over twelve years. Since 1939 he has been a District Manager with headquarters at Montgomery, Ala., and before that was in the Sales Office at Atlanta, Ga.

### **N. F. A. to Hold 1945 Meeting at French Lick, Ind.**

The Board of Directors of the National Fertilizer Association has decided to hold the 1946 Annual Convention of the Association at French Lick Springs Hotel, French Lick, Indiana. Meetings will be held on Tuesday, June 11, and Wednesday, June 12, 1946.

### **American Cyanamid Company Promotes Arrowsmith**

H. Walton Arrowsmith has been appointed District Sales Manager by the Fertilizer Division, American Cyanamid Company, and in this capacity will direct all Fertilizer Division activities in the West Coast area, including California, Arizona, Washington and Oregon. He is now located at the Fertilizer Division's new headquarters, Russ Building, 235 Montgomery Street, San Francisco 4, Calif.

Employed by the Fertilizer Division in 1925, Mr. Arrowsmith remained in the New York office for seven years when he was transferred to Rochester and placed in charge of all fertilizer sales in New York State. Several years later, he was appointed to the position of District Sales Supervisor of Georgia, and has served the Fertilizer Division in this capacity for the past six years.

### **Swedish War Production of Superphosphate**

With the supplies of imported phosphate rock cut off by war conditions, the Swedish fertilizer industry developed a substitute material from deposits of high-grade phosphate iron ore containing from 3 to 4 per cent phosphorus. The material was crushed and a concentrated pulverized iron ore was produced. The residue was treated in a flotation plant and an apatite concentrate containing 28 to 30 per cent  $P_2O_5$  was recovered. From this a low-grade superphosphate was manufactured, in a quantity equal to 200,000 tons of 20 per cent superphosphate. It is not expected that this process will be continued during peace time when normal imports of phosphate rock are resumed. The process has been described by S. Nordengren in the Journal of the Royal Swedish Academy of Agronomy, 1943.

### N. F. A. Gives Luncheon for Members of the Press

Under a beautiful southern sun, radiating a temperature of 90 degrees, the directors of the National Fertilizer Association gave an unique luncheon on Friday, October 19th, to the members of the press in one of the banquet rooms of the Willard Hotel in the nation's capital. The unique feature of this luncheon—there were no speeches.

The luncheon was well thought-out, and not a detail overlooked, and the directors and Association are to be congratulated on their pleasant gesture. The 43 press representatives present were the following:

Clarence Bourg, *American Sugar Cane League*  
 Dr. R. P. White, *American Association of Nurserymen*  
 Val C. Sherman, *Milk Producers Federation*  
 Wm. Heckendorn, *National Council Farm Coop.*  
 Earl W. Benjamin, *Washington Coop. Farmers Association*  
 Oscar E. Naumann, *New York Journal of Commerce*  
 Ross Stinchfield, *Potash Journal*  
 Ralph Cherry, *Oil, Paint & Drug Reporter*  
 L. W. Moffett, *Iron Age*  
 Henry D. Ralph, *Modern Industry*  
 Frederick Bailey, *Country Gentleman*  
 Malcolm Burton, *Food Industries*  
 Miss Ruth Quinn, *Pathfinder*  
 John Cipperly, *Northwestern Miller*  
 Arthur Brown, *Nation's Business*  
 Whitney Tharin, *Agricultural News Service*  
 Alexander Nunn, *Progressive Farmer*  
 Paul Barkley, *Agricultural News Service*  
 Walter Taft, *Railway Age*  
 Shirley Mayer, *Traffic World*  
 Stanley H. Smith, *Traffic World*  
 Walter Stauffer, *National Lime Association*  
 Louis Wilson, *National Grange Monthly*  
 Wayne Darrow, *Farm Reports*  
 Donald Lehman, *U. S. D. A.*  
 Ben James, *U. S. D. A.*  
 Miss M. Ruth Gmeiner, *UP*  
 Erwin D. Sias, *INS*  
 Karl Bauman, *AP*  
 R. S. McBride, *McGraw-Hill*  
 S. D. Henry, *McGraw-Hill*  
 Donald D. Hogate, *McGraw-Hill*  
 Henry Huschke, *National Crushed Stone Association*  
 Miss N. A. Parkinson, *American Chemical Society*  
 J. Sidney Cates

Col. Benjamin F. Castle, *Milk Industry Foundation*  
 Frederick G. Taylor, *American Sugar Beet Industry*  
 George Haddock, *National Association of Manufacturers*  
 Miss Beverly Meyer, *New Orleans Times Picayune*  
 Samuel L. Veitch, *The American Fertilizer*  
 Oliver B. Lerch, *U. S. News*  
 George Goddard, *Food Letter*  
 Dr. C. G. Woodbury, *National Canners Association*

Following members of the Association were present:

M. H. Lockwood (Chairman of Board), Eastern States Farmers Exchange  
 H. B. Baylor, International Minerals & Chemical Corp.  
 B. H. Brewster, III, The Baugh & Sons Co.  
 C. T. Brown, Federal Chemical Co.  
 Robert S. Cope, The Reliance Fertilizer Co.  
 Leon H. Davis, The Southern Cotton Oil Co.  
 W. H. Gordon, Chamberlin & Barclay, Inc.  
 R. L. King, Georgia Fertilizer Co.  
 E. S. Russell, Old Deerfield Fertilizer Co.  
 C. D. Shallenberger, Shreveport Fertilizer Works  
 Lionel Weil, Weil's Fertilizer Works  
 M. W. Whipple, Olds & Whipple, Inc.  
 F. J. Woods, The Gulf Fertilizer Co.  
 M. G. Field, Merridian Fertilizer Factory

The staff members of the Association busily engaged in taking care of the details, and carrying through the function with precision, were: D. S. Murph, Executive Secretary and Treasurer; F. S. Lodge, R. H. Engle, W. S. Ritnour and R. H. Lush.

### Keim of WPB Goes to Potash Institute

M. M. Keim, for the past three years Industrial Specialist with the Chemical Bureau of the War Production Board, has joined the staff of the American Potash Institute. A native Nebraskan, Mr. Keim received his training at the University of Nebraska and his Master's Degree from Rutgers University. With the Potash Institute, he will be in charge of its economic and statistical department.

Mr. Keim is a member of Alpha Zeta, Gamma Sigma Delta, and Sigma Xi. He will make his home in Washington and be connected with the Washington headquarters of the Institute.

## N. F. A. Committees Appointed

At a meeting of the Board of Directors of the National Fertilizer Association, held at Washington on October 19th, two vacancies in the Board were filled by the election of J. H. Epting, Epting Distributing Co., Leesville, S. C., for District 5, succeeding George W. Gage, resigned; and of C. R. Martin, Miami Fertilizer Co., Dayton, Ohio, for District 10, succeeding H. R. Ringler, resigned.

Committees for the Association were appointed as follows:

*Executive Committee:* M. H. Lockwood, Chairman, H. B. Baylor, B. H. Brewster, III, F. N. Bridgers, R. L. King, Weller Noble, H. A. Parker, C. T. Prindeville, Fred J. Woods.

*Budget Committee:* Fred J. Woods, Chairman, B. H. Brewster, III, R. L. King.

*Public Relations Committee:* C. T. Prindeville, Chairman, H. B. Baylor, M. H. Lockwood.

*Membership Committee:* Leon H. Davis, Chairman, Nelson T. White, (other members to be named later).

*Association Staff Employment Committee:* H. B. Baylor, Chairman, R. L. King, J. A. Miller.

*Chemical Control Committee:* C. A. Butt, Chairman, Frank G. Keenen, Thomas G. Law, F. S. Lodge, J. K. Plummer, H. B. Siems, O. I. Struve, S. M. Wilson.

*Plant Food Research Committee:* H. B. Siems, Chairman, Herbert C. Brewer, Thomas F. Bridgers, E. N. Carvel, Leroy Donald, Robert H. Engle, S. D. Gray, G. N. Hoffer, Frank L. Holland, Frank G. Keenen, M. H. Lockwood, David D. Long, R. H. Lush, Wallace Macfarlane, H. B. Mann, R. D. Martenet, H. H. Tucker.

## Callister to Head International Fertilizer Committee

The Committee on Fertilizers of the Combined Food Board and the Combined Raw Materials Board has named George J. Callister as chairman of the committee. Mr. Callister was formerly Vice-President and Secretary of the American Potash Institute and left during the war to serve as Fertilizer Administrator of the Canadian Wartime Prices and Trade Board, Ottawa, Canada.

The committee includes representatives of the United States, United Kingdom, Canada, France, Norway, Belgium, Nether-

lands, Denmark and Chile. W. C. Finn of the U. S. Department of Agriculture is this country's member on the committee.

The principal problems dealt with by the committee at present are the needs of the liberated areas of Europe for fertilizers, in order to build up their agriculture production and be less dependent on other countries for their food supplies. The committee plans to distribute fertilizers on as equitable a basis as possible, pending the resumption of normal fertilizer production and distribution.

For example, E. R. Henson, director of the Agricultural Rehabilitation Division of UNRRA, recently reported that the present needs of Poland, Czechoslovakia, Yugoslavia and Greece are for 407,000 tons of nitrate of soda, 272,000 tons of rock phosphate, 423,000 tons of superphosphate, and 111,200 tons of potash. For several years these countries have had no commercial fertilizer. UNRRA is seeking materials to supply about 40 per cent of the tonnage requested.

## F. P. Scar Starts Fertilizer Brokerage Firm

Frank P. Scar has recently resigned as Vice-President of Synthetic Nitrogen Products Corporation. He has organized the firm of Scar-Lipman & Co., Inc., 16 Melville Place, Irvington, N. J., which will operate as brokers and agents in the distribution of domestic and foreign fertilizer materials and chemicals. Associated with him are John J. McCabe, Jr., and Leonard H. Lipman. John J. McCabe, Jr., is President of the McCabe Paint & Varnish Company, Irvington, N. J. Leonard H. Lipman has had many years experience marketing chemicals and fertilizer materials.

## International Minerals & Chemical Elects New Directors

The stockholders of International Minerals and Chemical Corporation, at their annual meeting on October 23rd, elected to membership on the Board of Directors, General Robert E. Wood, president of Sears, Roebuck and Co.; R. Douglas Stuart, president of Quaker Oats Company; and Thomas S. Lamont, vice-president of J. P. Morgan and Co. The latter will fill the vacancy caused by the resignation of his father, T. W. Lamont. The membership of the Board has been increased from seven to nine members.

## Soil Program Control for 1946 to Be Decentralized

Extension of the U. S. Department of Agriculture's over-all policy of adapting good soil practices to the individual needs of the nation's 6,000,000 farms is included in the 1946 Agricultural Conservation Program, announced on October 25th.

The 1946 program in most States will give more responsibility to farmers, working through AAA county and community committeemen, in recommending conservation practices to be carried out on farms, according to N. E. Dodd, Director of the Field Service Branch of the Production and Marketing Administration.

Under this plan, the Counties will be given an allocation of funds within which to operate their conservation programs. The local committeemen will sit down with individual farmers and help plan a conservation program based on the actual needs of the farms. Final approval of the plan will rest with the county committee. Past AAA programs have allocated assistance principally according to a statewide formula applicable to each farm in order to get practices carried out on a broad scale.

Mr. Dodd pointed out that the "grass roots" approach should help speed the efficient reconversion of the nation's farmland from the strain of wartime production to longer-range soil-building and water conservation.

"The end of the war with its urgent demands for all-out production sounds a note of caution for farmers to take inventory of their most important capital asset—their land," Mr. Dodd declared. "Unless we conserve the productivity of our farms, we will jeopardize the bedrock foundation for lasting post-war prosperity."

The 1946 program has been planned to provide about the same assistance that

farmers received under the 1945 program. However, more soil practices are expected to be carried out under the new program since the farmer will bear more of the conservation cost than under the 1945 program.

"We realize that the program will not be big enough to repair in one year the damage caused by heavy wartime production," Mr. Dodd stated. "But, to get as much accomplished as possible we are asking cooperating farmers to contribute a greater part of the cost of conservation practices than in former years."

The 1946 ACP program is divided into these types of practices for which assistance will be available: (1) Application of lime, fertilizers and other materials; (2) planting of cover crops; (3) harvesting of legume and grass seeds; (4) erosion control and water conservation; (5) range and pasture improvement; (6) forestry; (7) other practices such as noxious weed control and clearing land for tillage or pasture.

Special emphasis will be on the application of lime and fertilizers to grasses and legumes. Much of the nation's soils in the humid areas, especially east of the Mississippi River, have been leached of their calcium and phosphorus.

Farmers have increased their use of lime by seven times and of phosphate by nine times since assistance for these practices was first offered in 1936. Using these and other program practices, farmers are improving their soils, getting better crop yields, and slowing erosion.

Farmers receive ACP assistance in the form of conservation materials, services, purchase orders, or payments. Conservation materials are purchased largely through regular trade channels including local dealers.

There also is need for the planting of more legume, green manure, and winter cover

(Continued on page 26)

## BRADLEY & BAKER

**FERTILIZER MATERIALS - FEEDSTUFFS**

**AGENTS - IMPORTERS - BROKERS**

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NEW YORK**

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Baltimore, Md.

BRANCHES  
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Norfolk, Va.

Barnett Bank Building  
Jacksonville, Fla.

504 Merchants-Exchange Bldg., St. Louis, Mo.



## FERTILIZER MATERIALS MARKET

### NEW YORK

**Production of Sulphate of Ammonia Still Decreasing. Some Imports Reported. Organic Materials Still Extremely Short in Supply. Superphosphate Situation Improving. No Additional Supplies of Potash Available.**

*Exclusive Correspondence to "The American Fertilizer"*

#### Sulphate of Ammonia

As a result of the strike in the coal fields, the production of sulphate of ammonia has continued to drop. Current production of by-product sulphate is estimated at about 10,000 tons per week. Fertilizer manufacturers with contracts are asking for quicker shipments and all production is going out with a minimum of delay. Some increase in imports has been reported.

#### Nitrate of Soda

The October price on domestic nitrate of soda has been continued during November. Stocks on hand are adequate to take care of the normal demands at this season of the year.

#### Organic Materials

No change in the organics picture has been noted. Supplies in all lines are notably short and the feed manufacturers are taking everything that is offered.

#### Superphosphate

The situation in the superphosphate market has eased somewhat. The supply of sulphuric acid has improved and in some centers the labor situation is getting back to normal. Production is continuing at top levels and acidulators have been able to accumulate some reserves to meet later seasonal demands.

#### Potash

No reserve supplies are in sight as fertilizer mixers have contracted for about all of the current production. Producers have had to refuse orders for additional shipments. It is predicted that European potash production for the next year or so will be needed to repair the ravages of war in European agriculture. A small amount of potash has been imported this year, coming chiefly from Russia.

#### Phosphate Rock

Production of phosphate rock continues in quantity sufficient for all current domestic demands. Inquiries for export are still being received and some large shipments have been made, although total exports so far this year are running behind those of 1944.

### CHARLESTON

**Organics and Sulphate of Ammonia Still in Short Supply. Current Shortage of Phosphate Rock Reported.**

*Exclusive Correspondence to "The American Fertilizer"*

CHARLESTON, October 29, 1945.

*Organics.*—No change in this situation as there are no offerings of nitrogenous of any kind.

*Sulphate of Ammonia.*—The extremely tight situation on this continues, the August production showing a decline of supply of 6 per cent as compared with July.

*Blood.*—Nominally the market continues at \$5.53 per unit of ammonia (\$6.72 per unit N), f. o. b. point of shipment, with practically no offerings.

*Nitrate of Soda.*—At present the supply continues sufficient to meet the calls from manufacturers.

*Phosphate Rock.*—The supply situation on this is very tight, indeed, and recently some of the principal producers have been forced to decline additional business nearby.

### CHICAGO

**Revocation of Order M-368 Raises Hopes for Better Supply of Fertilizer Organics. Feed Market Tight.**

*Exclusive Correspondence to "The American Fertilizer"*

CHICAGO, October 29, 1945.

Order M-368 has finally been revoked but the effect on increased nitrogenous has not yet been manifested.

It is hoped by the end of this year more

(Continued on page 20)



## *It's all in Knowing How*

Like modern equipment has improved methods of production, the modern horseshoe has improved the records and pitching ability of those who enjoy the sport. The square shoe with hooks on the heels has replaced the original barnyard pitching equipment. Thus amateurs now pitch from 30 % to 90 % ringers, and professionals often throw close to 100 %.

You don't have to be lucky to pitch ringers. If you grip the horseshoe correctly, pitch it the right distance, in line with the peg and making a  $1\frac{1}{4}$  or  $1\frac{3}{4}$  turn, you have a ringer. And after practice it is possible to ring the peg 9 out of 10 tries. Then you're an expert.

Yes, *it's all in knowing how*. And when it comes to Shipping Sacks Raymond has that "know-how". More than fifty year's experience in making dust-proof, sift-proof, and water-resistant Multi-Wall Paper Shipping Sacks has made Raymond an expert in this field.

Raymond CUSTOM BUILT Multi-Wall Fertilizer Shipping Sacks are made in practically any size and strength—in various types, with valve or open mouth, printed or plain, sewn or pasted.



THE RAYMOND BAG COMPANY  
Middletown, Ohio

# RAYMOND

MULTI-WALL *Paper* SHIPPING SACKS

### International Plans World's Largest Amino Products Plant

Plans for the erection of this country's largest amino products plant, a \$2,500,000 project, were announced by Louis Ware, president of International Minerals & Chemical Corporation, at the annual meeting of stockholders on October 23rd. The new plant will be located at San Jose, California.

With the erection of the new plant, International will double its present output of amino products, Mr. Ware said. Most important of these is mono sodium glutamate, a vegetable seasoning used to enhance the natural flavors of fine foods. It is derived from the proteins found in wheat and sugar beets.

"Prior to World War II, the Japanese dominated the world production of mono sodium glutamate, and the American food processors were obliged to import substantial quantities of the product to supplement the limited domestic supplies," Mr. Ware told the stockholders group. "We now hope that, through the new plant's facilities and the expanded operation at our Toledo, Ohio, plant, International will play a large part in breaking the Japanese monopoly.

"With the continued encouragement by the government in Washington and by domestic users it should soon be possible for the American housewife to serve fine foods whose flavors are accentuated by amino products made right here in America."

Mr. Ware pointed out that the corporation's extensive research program had already produced patents and processing techniques which "give International an unusually favorable position in the amino products field."

The new plant is expected to be in full operation at San Jose by the summer of

1946, Mr. Ware said. "Design of the plant will permit later economic expansion of output to meet increasing market demands."

In addition to increased quantities of mono sodium glutamate for food processors, the new plant will add substantially to International's production for pharmaceutical uses. These latter amino products include: glutamic acid, glutamic acid hydrochloride, betaine, betaine hydrochloride, leucine, isoleucine and tyrosine.

### Mississippi Grades for 1946

The State of Mississippi, as provided by law, has issued the list of fertilizer grades and materials that are acceptable for registration and sale in that State for the year 1946. Five grades of mixed fertilizer, 0-14-7, 4-8-8, 5-10-5, 6-8-4, and 6-8-8, are listed, together with 18 and 20 per cent superphosphate, and 13 standard materials.

### Florida Nitrogen Tests

At a recent meeting of the Florida Horticultural Society, E. N. McCubbin of the Florida Agricultural Experiment Station at Hastings presented the results of a fertilizer experiment with cabbage. The results show that cabbage on sandy soils responded markedly to nitrate nitrogen and less to other forms of this element and that 175 to 200 pounds of nitrogen per acre are needed to produce maximum yields. A special grade of 10-7-5 gave the highest yield. Wallace R. Roy of the U. S. Department of Agriculture at Orlando showed that, when nitrogen is absent, all other elements are absorbed in limited amounts, but with nitrogen present the intake of the other elements was markedly increased.

Manufacturers'  
Sales Agents for **DOMESTIC**

**Sulphate of Ammonia**

Ammonia Liquor :: Anhydrous Ammonia

**HYDROCARBON PRODUCTS CO., INC.**

**500 Fifth Avenue, New York**

## CHICAGO

(Continued from page 17)

material will appear on the market though it may not satisfy the demand.

While slightly better livestock receipts have increased feed production, the gain has not measured up to the demand. All materials are held firmly at ceiling.

Ceiling prices are:

High grade ground fertilizer tankage, \$3.85 to \$4.00 (\$4.68 to \$4.86 per unit N) and 10 cents; standard grades crushed feeding tankage, \$5.53 per unit ammonia (\$6.72 per unit N); blood, \$5.53 (\$6.72 per unit N); dry rendered tankage, \$1.25 per unit of protein, f. o. b. producing points.

### Potash Production Reaches New Peak in 1944-45

A record tonnage of potash was delivered by the five leading potash producers during the fertilizer year June, 1944, to May, 1945, according to compilations released by the American Potash Institute. Deliveries were made to 41 states, District of Columbia, Canada, Cuba, Puerto Rico and Hawaii. A total of 692,406 tons of  $K_2O$  was delivered to the United States during this period while Canada, Cuba, Puerto Rico, and Hawaii

received 43,768, 3,483, 18,711, and 9,513 tons, respectively. Total agricultural deliveries amounted to 767,881 tons  $K_2O$ . Deliveries to United States represent an increase of 99,060 tons  $K_2O$  or 16.7 per cent over the preceding fertilizer year, while total deliveries of agricultural potash increased 113,021 tons  $K_2O$  or 17.3 per cent.

The leading state for deliveries was Georgia with 67,248 tons, followed in order by Ohio, Florida, Illinois, and North Carolina, all taking in excess of 50,000 tons  $K_2O$  during the year.

The 60 per cent was the leading grade, comprising 78 per cent of the agricultural potash delivered during the year, followed by the 50 per cent muriate and sulphates, each with approximately 8 per cent, and manure salts with 6 per cent. Ohio was the leading state for the 60 per cent muriate grade, followed by Georgia, Illinois, Maryland, and Virginia. Florida took the greatest tonnage of sulphates, followed by North Carolina and Virginia. The sulphate figures include both sulphate of potash and sulphate of potash-magnesia. The manure salts decreased from 10 per cent in 1943-44 to 6 per cent in 1944-45, whereas the 60 per cent muriate increased from 74 per cent to 78 per cent for the same period.

#### DELIVERIES OF AGRICULTURAL POTASH SALTS OF AMERICAN ORIGIN JUNE, 1944-MAY, 1945, INCLUSIVE

SHORT TONS OF  $K_2O$ 

	60 PER CENT MURIATE	50 PER CENT MURIATE	MANURE SALTS	SULPHATES	TOTAL
United States.....	536,583	60,065	42,179	53,578	692,406
Canada.....	35,123	2,965	3,104	2,576	43,768
Cuba.....	2,857	—	—	627	3,483
Puerto Rico.....	16,767	—	—	1,943	18,711
Hawaii.....	7,542	—	—	1,971	9,513
	598,872	63,030	45,283	60,695	768,881



Trade Mark Registered

## MAGNESIUM LIMESTONE

"It's a Dolomite"

American Limestone Company

Knoxville, Tenn.



# NITROGEN

## for chow?



**Yes, indeed!** By the time it reaches G.I. Joe's mess kit, this nitrogen is in protein, of course. And he needs a lot of it.

Thanks to the American farmer and the help he gets from his fertilizer manufacturers, our soldiers always eat well.

To make better fertilizers . . . to grow better crops . . . Urea-Ammonia Liquor is an efficient and economical source of nitrogen. UAL is excellent for the formulation of mixtures which are low in acid equivalent because UAL supplies urea nitrogen. Urea nitrogen is also completely available to growing plants, yet it resists leaching; so it is available over a long period.

To meet the varying requirements of fertilizer manufacturers, Du Pont offers four Urea-Ammonia Liquors plus "Uramon"

Fertilizer Compound. Let us give you more information.

E. I. du Pont de Nemours & Co. (Inc.),  
Ammonia Department, Wilmington 98, Del.

**DU PONT**  
**UREA-AMMONIA**  
**LIQUORS**

**URAMON\***

FERTILIZER COMPOUND



BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

\*REG. U. S. PAT. OFF.

### Personal Mention

*K. D. Jacob*, Division of Soil and Fertilizer Investigations, Bureau of Plant Industry, Soils, and Agricultural Engineering, Beltsville, Md., is making an extensive official inspection trip to the chemical and fertilizer industries of Europe including those of occupied Germany.

*Dr. Ira L. Baldwin*, graduate of Purdue University and of the University of Wisconsin, with which latter institution he has been connected for more than 25 years, has been made Dean of the College of Agriculture, University of Wisconsin, to succeed Dr. E. D. Fred who became President of the University earlier this year.

*Dr. Fred T. Mitchell*, professor of education and dean of men at Michigan State College and a native of Mississippi, has been elected President of Mississippi State College to succeed *Dr. G. E. Humphrey* who is now President of the University of Wyoming.

*Frank G. Steward*, formerly agricultural technologist for the company, has been made manager of the Agricultural Products Department, Shell Chemical Division, Shell Union Oil Corp., San Francisco, Calif.

*Dale C. Kieffer*, former head of the Agricultural Chemical Section of the War Production Board, has joined the staff of Smith-Douglass Company, Norfolk, Va.

*Alonzo White*, former chief of the Sulphuric Acid Unit of the War Production Board, is now associated with the Standard Phosphate and Acid Works, Baltimore, Md.

*Myron E. Keim*, allocator of potash in the War Production Board, has been added to the staff of the American Potash Institute, Washington, D. C.

*Winthrop R. Corey*, who handled phosphate and phosphate rock problems in WPB at the close of the war, is now with Monsanto Chemical Co., St. Louis, Mo.

### Bernard Armour Buys Ore and Chemical Corporation

Bernard Armour, president of the Heyden Chemical Corporation, has individually purchased from the Alien Property Custodian the Ore & Chemical Corporation. The phosphate lands in Florida are under lease to corporation. Future plans for the plant of Ore & Chemical have not been determined as yet by Mr. Armour.

### Contribution of Sulphate of Ammonia to Food Production

In the calendar year 1944, use of coke-oven sulphate of ammonia by the United States fertilizer industry reached an all-time high—the huge quantity of 765,000 net tons, supplying approximately one-half of the total nitrogen used in American mixed complete fertilizers in that year. Yet, impressive as these figures are, they become insignificant when compared with the volume of farm products which resulted from the 1944 use of sulphate of ammonia in fertilizers. Simply for illustration, a ton of sulphate of ammonia, used under the right conditions and in appropriate amounts, increases the producing-power of the corn fertilizers in which it is used by some 200 bushels of corn; or roughly, the weight of the extra corn normally produced by sulphate of ammonia contained in corn fertilizers is 5.6 times the weight of the sulphate of ammonia itself! Similarly, a ton of sulphate of ammonia spread over 20 acres of winter oats adds about 400 bushels to the yield, or a weight ratio of 1.6. On wheat, increase in bushels is less, but in weight about the same



### "JAY BEE"

MODEL W  
Direct Connected  
50 H.P. to 200 H.P.

#### Puts Extra Peacetime Profits Into Your Plant

The greater need for peacetime crops requires speed-up in fertilizer production. "Jay Bee" grinds any material going into commercial fertilizers—fast, cool and uniform. Heavy all steel construction makes the "Jay Bee" Hammer Mill practically indestructible. Greatest capacity for H.P. used. Sizes and styles to meet every grinding requirement: 12 H.P. to 200 H.P. with belt, V-belt, and direct connected drives.

Write for complete details, prices, etc.  
State your grinding requirement, please.

**J. B. SEDBERRY, Inc.**

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## PITCHING IN TO HELP OUT

**HIGRADE  
MURIATE OF POTASH  
62/63% K<sub>2</sub>O  
GRANULAR  
MURIATE OF POTASH  
48/52% K<sub>2</sub>O  
MANURE SALTS  
22/26% K<sub>2</sub>O**



Reg. U. S. Pat. Off.

There's a lot of pitching in to be done when harvest time comes around. The neighbors lend a hand. Hired help arrives in strength. The women do their share, too.

But long before, there's the help your fertilizers give the farmer. Most of these fertilizers are compounded with potash—the vital soil nutrient which increases soil

fertility, provides greater resistance to disease and drought, and enables the farmers to produce above-average crops season after season.

Sunshine State Potash is one of the many helping hands America's farmers need in order to get the most out of the soil and increase their harvests.

**UNITED STATES POTASH COMPANY**

*Incorporated*

30 Rockefeller Plaza, New York 20, N. Y.



as for oats. Other crops respond in similar manner.

Despite the large tonnage in which it is produced and used, coke-oven sulphate of ammonia is after all a by-product. It has to be produced whenever the batteries operate, and it cannot be produced when the coke-oven batteries are down, no matter how urgent the need. As it happens, however, the major use of the coke produced is in the manufacture of steel; and, with steel needed for many products, the production of sulphate of ammonia has been at a very high level.

In 1944, by action of the Government, practically all of the coke-oven sulphate of ammonia produced was allocated for use in mixed fertilizers only. This action was somewhat unpopular with certain sulphate of ammonia producers, and was definitely inconvenient to cotton growers in the Mississippi Valley, to sugar cane producers in Louisiana, and to fruit growers all over the country, for the action forced these growers to look elsewhere for their nitrogen materials, and to change practices based on years of successful experience. Nevertheless, the larger good of the Nation was served by the decision made. There was a dire need for a greatly increased tonnage of mixed complete fertilizers containing high nitrogen, and, of all the nitrogen materials available, sulphate of ammonia has the chemical and physical properties needed for this particular use.

Still further to increase the amount of coke-oven sulphate of ammonia available to our American farmers, the Government permitted only token quantities to be exported, ruling that, with the food situation as it was, practically all of our domestic sulphate of ammonia should be used here at home. These two factors contributed to the large tonnage above mentioned—

coke-ovens and gas plants all over the country running at capacity, and nearly all of the sulphate of ammonia produced made available to American farmers, through the great fertilizer industry.

### Commercial Fertilizers Increase Idaho Potato Yield

In a series of experiments made by the Idaho Agricultural Experiment Station and reported in Bulletin No. 265, study was made of the influence of nitrogen, phosphorus, and potassium fertilizers when applied singly or in combinations on the yield and quality of Idaho potatoes grown in demonstration plots over a 10-year period, 1935-1944, in counties of southern Idaho.

Potato yield increases which were highly significant, statistically and economically, were obtained on the irrigated southern Idaho desert soils from the applications of 175 pounds (average) each of ammonium sulphate and treble superphosphate and mixtures of these two fertilizer carriers.

Nitrogen plus phosphate treated plots outyielded the nitrogen and the phosphate treated plots where either fertilizer was applied separately. The difference between the nitrogen plus phosphate response and the complete fertilizer response was small and non-significant.

The single element fertilizer phosphate appeared to be the most important plant nutrient, but nitrogen was also important in the production of high potato yields.

There was not apparent response from the addition of potassium to the nitrogen and phosphate combination fertilizer.

Greater fertilizer responses were obtained on fields which were in non-legume crops the previous year than those in legume crops. The average potato yields from the check plots previously in alfalfa or clover were

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and Cage Type  
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Vibrating  
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FOUNDRY & MACHINE WORKS  
AURORA, INDIANA, U.S.A. Founded 1834



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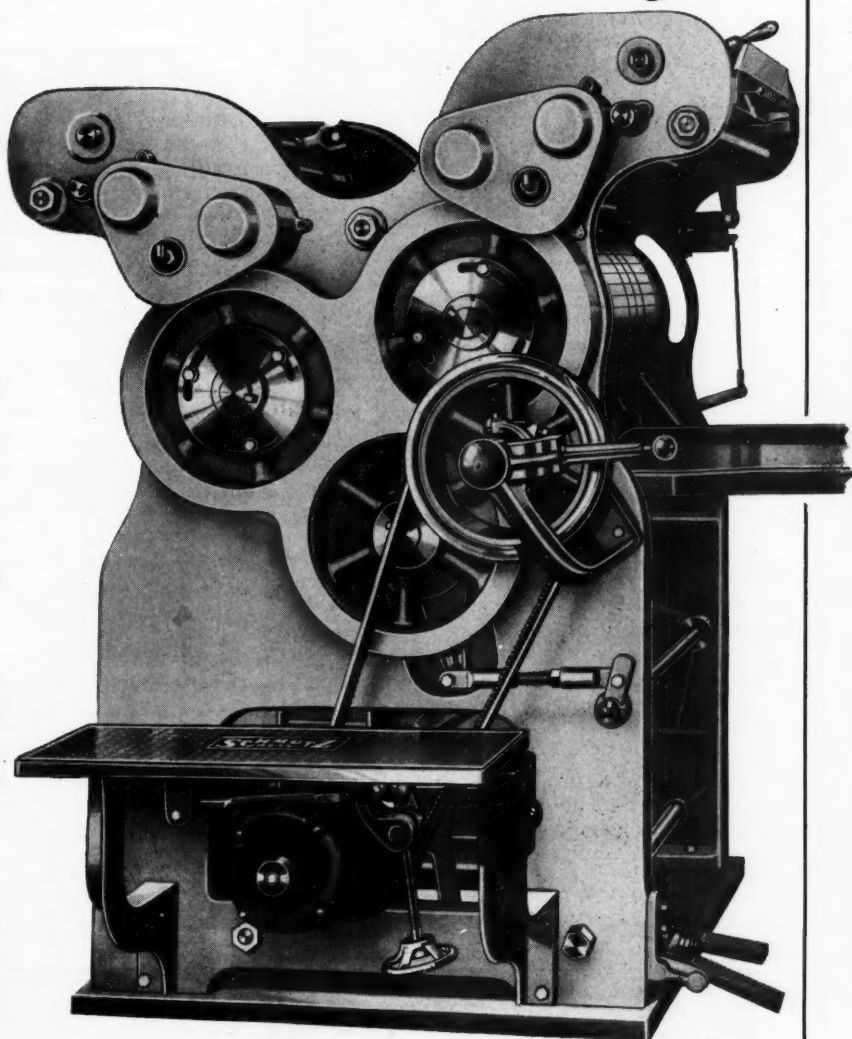
The highest type of printing can be done with this machine at the lowest possible cost. It will also do an excellent job of printing on used bags.

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significantly higher than those yields from check plots previously in a non-legume crop.

The average percentage of U. S. No. 1 potatoes was only slightly increased by the application of commercial fertilizers. Only in the case of the nitrogen plus phosphate fertilizer group of demonstrations was the average increase of 3.3 per cent significant statistically. Average yield increases were sufficiently large to bring about a substantially greater quantity of U. S. No. 1 potatoes per acre for all treatments.

#### SOIL PROGRAM CONTROL FOR 1946

(Continued from page 16)

crops on many millions of acres of pasture and meadow which were plowed up during the war. This land must be brought into a system of cropping which will protect it against the dangers of water and wind erosion, Mr. Dodd pointed out.

With the demand for livestock and other farm products expected to remain at high levels for the next few years, there is a definite need for pasture and range improvement, including construction of ponds and reservoirs.

The 1946 ACP, like previous programs, is flexible to meet the specific needs of farmers in all parts of the country. The program varies by States and Counties according to the climate, topography, type of farming, and the conservation needs. The approved practices were developed by local AAA farmer-committeemen, representatives of state agricultural colleges and experiment stations, and other agricultural agencies.

The program is administered by locally elected committeemen in each of the nation's agricultural Counties. All committeemen are active farmers.

Between  $3\frac{1}{2}$  to 4 million farms were assisted in the 1945 ACP program in carrying out the needed conservation practices. This comprised nearly 75 per cent of the nation's cropland. Better soil practices have helped in the increase of farm production during the war by one-third above 1935-39 levels.

#### INTERRELATIONSHIPS OF SOILS AND PLANTS ANIMAL AND HUMAN NUTRITION

(Continued from page 8)

animal production per acre of more than 43 per cent. This is an illustration of increased yields and an increased quality of the feed produced, resulting from the addition of fertilizing materials. He has also pointed out that as the lime content of certain soils increased there was a corresponding increase in the amount of protein in wheat.

#### Some Factors Affecting the Value of Plants as Foods

It is recognized that the composition of plants grown on different soil types varies in both organic and inorganic constituents. This is illustrated in certain cooperative studies made by seven Southern experiment stations in a study of the "Effect of Fertilizer and Environment on the Iron Content of Turnip Greens."

The study revealed that the iron content of turnip greens grown in various locations in seven Southern states differed by as much as 400 to 500 per cent.

It was stated that a portion of this variation was associated with the amount of organic matter in the soil. Turnip greens produced on soils rich in organic matter were high in iron.

Climatic conditions also influenced iron content. Turnip greens grown in the spring generally contained more iron than those grown in the fall.

The most significant effect of the fertilizer treatments was the decrease in iron content resulting from the application of nitrogenous fertilizer.

#### Farm Animals Are Good Judges of High Quality Feed

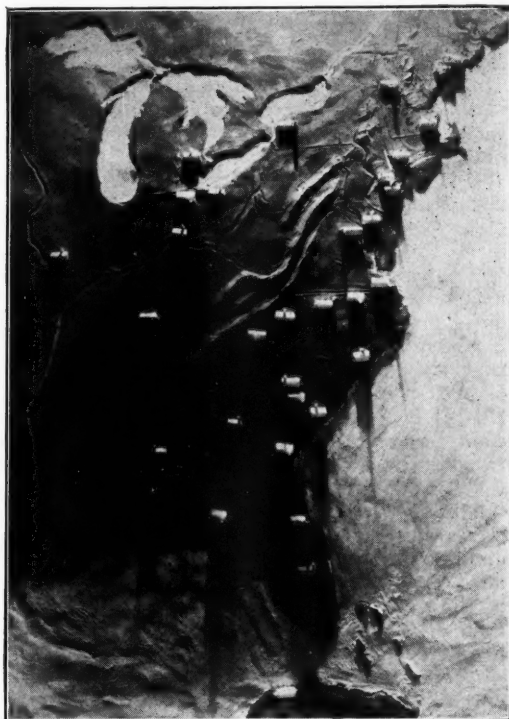
It has been observed by many that if a portion of a pasture is given an application of superphosphate, potash, or lime, or a combination of these materials, the cattle will graze down the treated area in preference to the untreated. This observation has been made and reported by J. R. Coker of Laurens county, S. C., and J. C. Riley of Saluda county, S. C., as well as by other farmers and

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**T**HE strategic factory locations of the American Agricultural Chemical Company, as shown on the accompanying map, assure prompt, dependable service for the complete line of products listed below.

We manufacture all grades of Commercial Fertilizers, Superphosphate, Agrinite Tankage, Bone Black, Bone Black Pigments (Cosmic Black), Dicalcium Phosphate, Monocalcium Phosphate, Gelatin, Agricultural Insecticides (including Pyrox, Arsenate of Lead, Calcium Arsenate, etc.), Trisodium and Disodium Phosphate, Phosphorus, Phosphoric Acid, Sulphuric Acid, Ammonium Fluosilicate, Magnesium Fluosilicate, Zinc Fluosilicate, Salt Cake; and we are importers and/or dealers in Nitrate of Soda, Cyanamid, Potash Salts, Sulphate of Ammonia, Raw Bone Meal, Steamed Bone Meal, Sheep and Goat Manure, Fish and Blood. We mine and sell all grades of Florida Pebble Phosphate Rock.



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Buffalo, N. Y.	East St. Louis, Ill.	Pierce, Fla.
Carteret, N. J.	Greensboro, N. C.	Port Hope, Ont., Can.
Cayce, S. C.	Havana, Cuba	Savannah, Ga.
Chambly Canton,	Henderson, N. C.	Searsport, Maine
Quebec, Can.	Montgomery, Ala.	South Amboy, N. J.
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Cincinnati, Ohio	Henderson, N. C.	No. Weymouth, Mass.	
Cleveland, Ohio	Houlton, Me.	Pensacola, Fla.	



Extension Service workers in this state. Desirable pasture plants such as white Dutch clover and lespedeza usually "come into" a pasture following the application of these materials; they also usually "go out" as these elements become more and more depleted.

Dr. Albrecht reports that on a Missouri farm where cattle had free access to stacks of hay—some of the hay being cut from a section of a limed and phosphated meadow and some from an untreated portion of the meadow—the animals first consumed the hay from the treated area and later ate the hay from the untreated area. He also reports that a portion of a field had been limed and later the entire field was planted to corn. All of the field was "hogged down" and it was observed that the hogs first consumed the corn on the limed area, notwithstanding the fact that they had to pass through the "unlimed corn" in going from their sheds to reach the "limed corn." These illustrations emphasize the fact that nature has endowed animals with the gift of selectivity of food and that when the proper foods are available, animals will first consume those most needed for proper body functions.

Common sense seems to tell us that dairy or meat products produced from "run-out" pastures, low-yielding corn, and "grass hay" by more or less anemic, parasitic, and scrub livestock could not possibly have the nourishing values of similar products that come from well bred, healthy, and vigorous animals which have been fed balanced feed and properly fertilized, nutritious, and palatable forage, hay, and pastures.

**Proper Balance of Soil Nutrients Increases Nodulation of Legumes and Lengthens Grazing Season of Pastures**

It has been pointed out by scientists that calcium is needed for legume bacteria as they live independently of their host. With a

limited lime supply they become abnormal and fail to inoculate. At the same time a certain amount of calcium is necessary in order that the phosphorus and the potash can be properly utilized by the bacteria in their formation of nitrogen-fixation nodules. A lack of appreciation of this fact may account for many failures of legumes in South Carolina, although the seed had been artificially inoculated before planting.

In speaking of pastures, Dr. Albrecht has stated: "Extended growth of the crop by giving it some soil fertility by which it can keep on growing suggests that possibly we have been labeling the crops as short-seasoned when in reality they have been merely starved by poor soils. A small amount of limestone, phosphate, or other fertilizer to keep a crop growing longer appears as a simple method of extending the grazing season."

**Plants Indicate Deficient Nutrients in the Soil**

Plants are so commonplace that many of us never stop to realize that they, like animals and human beings, are living things. They take in food and convert it into body tissues and energy; they can be healthy and vigorous or they can be ill and die; they have their acute diseases and their minor ailments; and they require certain nutritive elements from the soil just as surely as do livestock and human beings. Many of these elements are the same ones required by animal and man. A lack of these soil nutrients or a deficiency of them produces certain characteristics in the growth and appearance of plants, commonly referred to as nutritional diseases of plants. In this way plants oftentimes are a means of pointing out certain deficiencies in the soil.

Among some of the common and most easily recognized nutritional diseases of plants in the Southeast and the deficient nutrients



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..... WHEN BORON IS NEEDED TO CORRECT A DEFICIENCY OF THIS IMPORTANT SECONDARY ELEMENT

Agricultural authorities have shown that a lack of Boron in the soil can result in deficiency diseases which seriously impair the yield and quality of crops.

When Boron deficiencies are found, follow the recommendations of local County Agents or State Experiment Stations.

Information and references available on request.

**AMERICAN POTASH & CHEMICAL CORPORATION**

122 East 42nd ST., NEW YORK CITY

Pioneer Producers of Muriate of Potash in America  
See Page 4



usually associated with their "disease-like" appearance are: Cotton rust and potash deficiency; sand drown of tobacco and magnesium deficiency; yellowish-white striping of corn leaves and magnesium deficiency, or weak stalks with marginal "firing" of the leaves and lack of potash. Irregular yellow mottling around the edges of the leaves of soybeans and cowpeas, which soon forms a continuous yellow border with a downward cupping of the leaf edges, later producing a leaflet with a ragged appearance, usually indicates a lack of potash. Retarded growth and early yellowing of the lower leaves may result from magnesium deficiency in cro-talaria. In the case of lespedeza, a lack of potash usually shows first as small dark spots along the margin of the leaves and soon results in a blackish-brown leaf which sheds from the plant. When manganese is deficient in the soil, the green tips of oat leaves turn yellowish-white, then brown, and soon become dried up and brittle, with the grain sheath often showing a pale green striping.

Again we are reminded of the fact that plants and animals are no better than the soils on which they grew.

#### **Well Nourished Animals and Plants Are More Resistant to Disease and Insects**

It is a well known fact that under-nourished livestock and people are less resistant to the ravages of disease and certain types of insects. This is no less true in the plant world.

It was pointed out in the preceding section that a deficiency in certain soil nutrients resulted in plant diseases such as rust in cotton, and sand drown in tobacco.

Among the control measures for some insects, entomologists recommend the stimulation of plant growth by fertilization of the soil—this is especially true in the control of the wireworm and the corn earworm. Fruit trees growing on infertile soil are more subject to damage from scale insects than those growing on a fertile soil; shot-hole borers are also much less prone to affect well fertilized trees. An ample supply of well balanced foods builds up those intangibles in both plants and animals that we refer to as "resistance" or "constitution"

and enables them to combat more effectively the inroads of disease and insects.

Plant breeders have given us high-yielding varieties of cotton; they have increased the spinning quality of the fibre and the oil mill value of the seed. Agricultural efficiency dictates that these qualities not only be maintained but that even further progress must be made in this field.

Recent studies made in North Carolina indicate that there is a direct relation between the oil content of cotton seed and the use of potash. Other studies also indicate that there is a direct relation between the spinning qualities of cotton fibre, the appearance of yarn, and the use of certain nutrients.

The fertilizer studies dealing with both the spinning qualities of the fibre and the oil mill value of the seed referred to in the preceding paragraphs are in the preliminary stage and are indicative of great economic possibilities to the Southern cotton farmer.

#### **Relation of Soil Fertility to Human Nutrition**

Some scientists tell us that the health and well-being of man, like livestock, depend to a large degree on the soil. Man, the Bible tells us, is a mere handful of clay into which the Creator has blown the warm breath of life. Viewed in chemical terms, the adult human body of 150 pounds contains but about  $7\frac{1}{2}$  pounds of ash, or the noncombustible material that came from the soil. This is the handful of clay into which all the processes of creation serve to blow the warm breath of sunshine, of water, of air, and all else from above the soil, to build our bodies by way of the foods we eat.

Medical science is moving from cure to prevention. Many leading physicians point to poor bone structure commonly called rickets, and to disturbed body functions under the more understandable term of malnutrition, traceable to deficiencies in soil.

Conservation of life—both livestock and human—depends to a large extent on the conservation of the nutrient quality, or the fertility, of the soil. An appreciation of this great truth should cause us to cooperate in, rather than hinder, the creation of more life and higher life, in plants, livestock, and human beings.

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# BUYERS' GUIDE • A CLASSIFIED INDEX TO ALL THE ADVERTISERS IN "THE AMERICAN FERTILIZER"



This list contains representative concerns in the Commercial Fertilizer Industry, including fertilizer manufacturers, machinery and equipment manufacturers, dealers in and manufacturers of commercial fertilizer materials and supplies, brokers, chemists, etc. For Alphabetical List of Advertisers, see page 33.



## AMMONIA—Anhydrous and Liquor

Barrett Division, The, Allied Chemical & Dye Corp., New York City.

DuPont de Nemours & Co., E. I., Wilmington, Del.

Hydrocarbon Products Co., New York City.

Nitrogen Products, Inc., New York City.

## AMMONIUM NITRATE SOLUTIONS

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Jalte Company, The, Jalte, Ohio

Raymond Bag Co., Middletown, Ohio.

St. Regis Paper Co., New York City.

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## BAG PRINUING—Machinery

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## BAGGING MACHINES—For Filling Sacks

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Utility Works, The, East Point, Ga.

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## BONE PRODUCTS

American Agricultural Chemical Co., New York City.

Armour Fertilizer Works, Atlanta, Ga.

Ashcraft-Wilkinson Co., Atlanta, Ga.

Bradley & Baker, New York City.

Huber & Company, New York City.

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Schmaltz, Jos. H., Chicago, Ill.

## BORAX AND BORIC ACID

American Potash and Chem. Corp., New York City.

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Schmaltz, Jos. H., Chicago, Ill.

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Nitrogen Products, Inc., New York City.

Phosphate Mining Co., The, New York City.

Virginia-Carolina Chemical Corp., Richmond, Va.

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Stillwell & Gladding, New York City.

Wiley & Company, Baltimore, Md.

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International Minerals and Chemical Corporation, Chicago, Ill.

Phosphate Mining Co., The, New York City.

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Virginia-Carolina Chemical Corp., Richmond, Va.

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Utility Works, The, East Point, Ga.

A Classified Index to Advertisers in  
"The American Fertilizer"

## BUYERS' GUIDE

For an Alphabetical List of all the  
Advertisers, see page 33

### HOPPERS

Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.  
Utility Works, The, East Point, Ga.

### IMPORTERS, EXPORTERS

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Utility Works, The, East Point, Ga.

### MACHINERY—Ammoniating

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### MACHINERY—Elevating and Conveying

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McIver & Son, Alex. M., Charleston, S. C.  
Phosphate Mining Co., The, New York City.  
Ruhm, H. D., Mount Pleasant, Tenn.  
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Utility Works, The, East Point, Ga.

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Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, New York City.  
Huber & Company, New York City.  
International Minerals & Chemical Corporation, Chicago, Ill.  
Schmaltz, Jos. H., Chicago, Ill.

### POTASH SALTS—Manufacturers

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Potash Co. of America, New York City.  
International Minerals & Chemical Corp., Chicago, Ill.  
United States Potash Co., New York City.

### PRINTING PRESSES—Bag

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### PYRITES—Brokers

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### REPAIR PARTS AND CASTINGS

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### SCALES—Including Automatic Bagging

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## BUYERS' GUIDE

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Virginia-Carolina Chemical Corp., Richmond, Va.  
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Virginia-Carolina Chemical Corp., Richmond, Va.

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Bradley & Baker, New York City.  
International Minerals & Chemical Corporation, Chicago, Ill.  
McIver & Son, Alex. M., Charleston, S. C.  
Schmaltz, Jos. H., Chicago, Ill.

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### UREA-AMMONIA LIQUOR

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### ZINC SULPHATE

Tennessee Corporation, Atlanta, Ga.

## Alphabetical List of Advertisers

American Agricultural Chemical Co., New York City. 27  
American Limestone Co., Knoxville, Tenn. .... 20  
American Potash and Chemical Corp., New York City. .... 4, 29  
Armour Fertilizer Works, Atlanta, Ga. .... 5  
Ashcraft-Wilkinson Co., Atlanta, Ga. .... Front Cover  
Bemis Bro. Bag Co., St. Louis, Mo. .... 3  
Bradley Pulverizing Co., Allentown, Pa. .... —  
Bradley & Baker, New York City. .... 16  
Chemical Construction Corp., New York City. .... —  
Du Pont de Nemours & Co., E. I., Wilmington, Del. 21  
Fulton Bag & Cotton Mills, Atlanta, Ga. .... 6  
Gascoyne & Co., Inc., Baltimore, Md. .... 34  
Hammond Bag & Paper Co., Wellsburg, W. Va. .... 28  
Hayward Company, The, New York City. .... 34  
Hough Co., The Frank G., Libertyville, Ill. .... —  
Huber Co., L. W., New York City. .... 26  
Hydrocarbon Products Co., New York City. .... 19  
International Minerals & Chemical Corporation, Chicago, Ill. .... 2nd Cover  
Jaite Company, The, Jaite, Ohio .... —  
Keim, Samuel D., Philadelphia, Pa. .... 33  
McIver & Son, Alex. M., Charleston, S. C. .... 29  
Mente & Co., Inc., New Orleans, La. .... —  
Monarch Mfg. Works, Inc., Philadelphia, Pa. .... 34  
Nitrogen Products, Inc., New York City. .... 30  
Phosphate Mining Co., The, New York City. .... 4  
Potash Co. of America, New York City. .... 3rd Cover  
Raymond Bag Co., Middletown, Ohio. .... 18  
Ruhm, H. D., Columbia, Tenn. .... 34  
Sackett & Sons Co., The A. J., Baltimore, Md. .... —  
Schmaltz, Jos. H., Chicago, Ill. .... 34  
Schmutz Mfg. Co., Louisville, Ky. .... 25  
Sedberry, Inc., J. B., Utica, N. Y., Franklin, Tenn. 22  
Shuey & Company, Inc., Savannah, Ga. .... 34  
Southern Phosphate Corp., New York City. .... 34  
Southern States Phosphate & Fertilizer Co., Savannah, Ga. .... 28  
Stedman's Foundry and Machine Works, Aurora, Ind. .... 24  
Stillwell & Gladding, New York City. .... —  
St. Regis Paper Co., New York City. .... Back Cover  
Tennessee Corporation, Atlanta, Ga. .... 24  
Texas Gulf Sulphur Co., New York City. .... —  
Titlestad, Nicolay, New York City. .... —  
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla. .... 29  
United States Potash Co., New York City. .... 23  
Utility Works, The, East Point, Ga. .... —  
Virginia-Carolina Chemical Corp., Richmond, Va. .... —  
Wiley & Company, Inc., Baltimore, Md. .... 34

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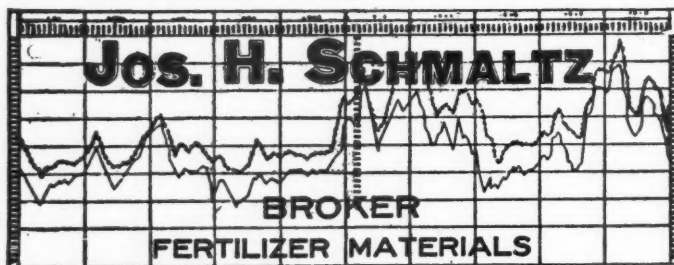
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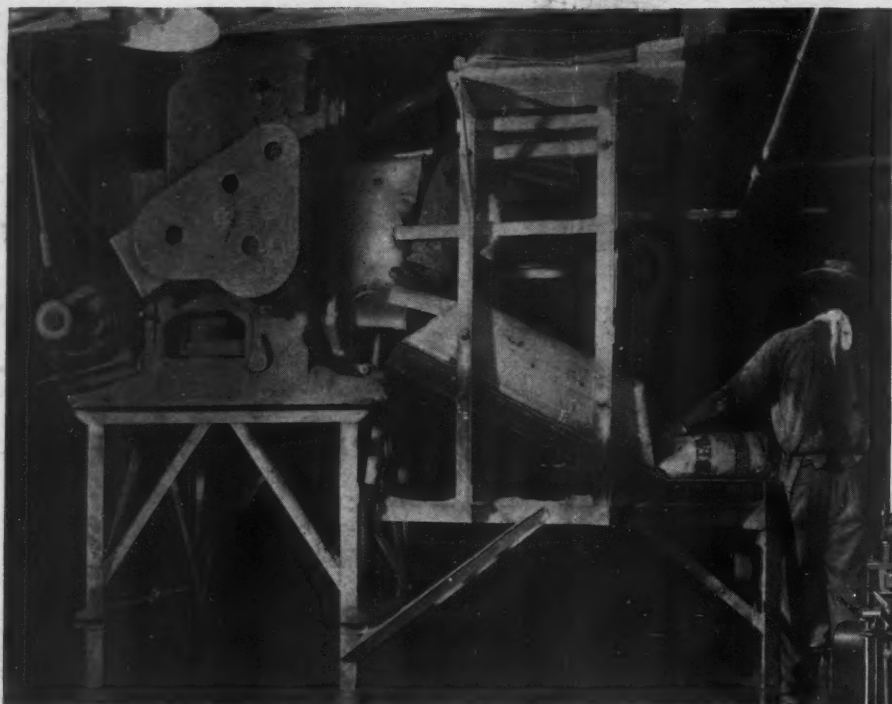
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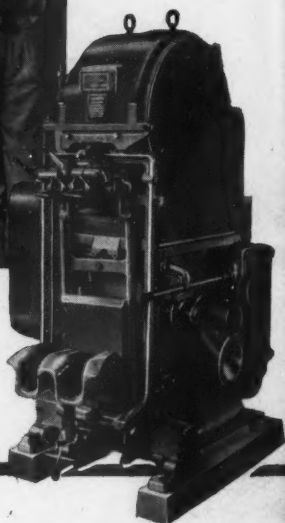






At left: This machine simultaneously fills and weighs Multiwall Paper Valve Bags.

Below: Showing the sturdy, compact construction which makes for dependability and economy of operation.



## Multiwall paper valve bags... *the ideal fertilizer package*

**Y**OU can speed up bag filling operations and actually reduce labor costs with St. Regis Multiwall Paper Valve Bags and Bag-filling Equipment.

St. Regis Valve-bag filling machines (shown above) not only quickly fill the bags, but they accurately preweigh your product.

And, when the bag is filled, the internal pressure of the contents automatically closes the bag valve. Naturally, this eliminates the need for any further closing equipment. As soon as the bags are filled, they are all ready for shipping.

### Moisture resistant, too

Multiwall bags are custom-built of several plies of specification kraft paper. They provide a tight moisture-resistant package which permits fertilizer to be stored out-of-doors without caking or damage through decomposition.

St. Regis Packaging experts will be pleased to discuss the type of bag and bag-filling system best suited to your particular requirements. Write for full information.

### Only Multiwalls offers these 4 BIG ADVANTAGES

- 1. PROTECTION.**  
Tough, moisture-resistant Multiwalls protect your fertilizer in storage or in transit.
- 2. ECONOMY.**  
Multiwalls prevent waste. No sifflage losses . . . and the bags empty clean.
- 3. EASE OF HANDLING.**  
Multiwalls are quickly loaded and handled with minimum of labor. Easy to open, too.
- 4. CLEANLINESS.**  
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